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what is plainly a barrier of nature. And science has a duty in pointing out that no devotion or enthusiasm can give any man a charmed life, and that those who work for the highest ends will best attain them in humble obedience to the common laws. Transcendentally this may be denied; the warning finger may be despised as the hand of the coward and the profane: but the fact remains,—the fact of an awful chain of English graves stretching across Africa.

#### Hairs as Records of Emotional Disturbances.

Dr. Pineus of Berlin claims to be able, by the aid of the polariscope, to detect certain traces of past emotions in the hairs. He explains, that, under the influence of mental disturbances of a violent kind, the hairs become decolorized at the junction of the lower two thirds with the upper third, reckoning from the surface of the skin to the root of the hairs. The observation, if exact, is interesting, but the recollection of such emotions is generally too vivid to render any artificial aid to memory necessary. If Dr. Pineus could only devise a means of detecting emotions to come, says the *Medical Press*, his *procédé* would excite a vast deal more curiosity.

#### NOTES AND NEWS.

IN the course of an article on recent progress in Egypt, the *London Times* says, "Both Egyptians and English are now alive to the need of educational progress. The people are no longer apathetic, as they were in the days of Mehemet Ali, who collected his pupils by force as he did his conscripts, and only kept them together by giving them food, lodging, clothing, and a monthly money payment of considerable value. Parents no longer believe the Koran contains every thing, or, rather, that what it does not contain is worth nothing. They are not yet alive to the advantages of trade or handicrafts, but they are fully alive to the advantages of government employment; and even in the villages a better class of education is urgently demanded. But want of funds stops the way. A general system of sound elementary education throughout the country would be one of the greatest blessings the English could confer; but it would cost money, and it cannot be done. All attention is concentrated on the higher schools in the big towns and in Cairo. You might as well try to build a pyramid without a base. Then, again, there are no teachers to teach the pupils. Inspection of such teaching as there is, and the establishment of normal schools for the training of the teachers of the future, are sadly wanted. Although the obvious duty of the English is to produce a class of Egyptian teachers, still the higher schools must remain for some time in the hands of professors from Europe. The educational system does not look so bad on paper. There are over 7,000 schools in the country, and 7,764 teachers; but the teaching is miserable, and out of a population of nearly 7,000,000 of people, only 200,000 can read and write."

—In Austria there is not only a high school of agriculture, costing the state 125,000 florins a year, but there are fifteen intermediate and eighty-three primary agricultural schools, besides nine chairs of agriculture in polytechnic establishments and agricultural experiment stations. Moreover, as stated in the *London Educational Times*, there are 162 courses of agricultural lectures, attended, on an average, by about 10,000 persons a year. The whole expense of agricultural subventions is set down in the Austrian Estimates for the present year as 1,777,034 florins.

—At a meeting of the International Meteorological Congress, held in Paris last September, the Rev. Father Denza read a paper on "The Decrease of Temperature in the Vertical Line." According to the figures he produced, the annual mean ascent required to obtain a decrease of one degree of temperature was 150 metres in the valley of Aosta, and 191 at Moncalieri (Monte Cenis), while 192 was the mean for the whole of Italy. At Pike's Peak, Colorado, 159 metres is the height required. In the winter months the heights in the valley of Aosta and at Moncalieri are 189 and 375 respectively, and 289 is the mean for Italy. It frequently happens that the temperature rises until a certain height is reached, and then decreases. This was particularly noticeable in January, 1887, when the temperature increased up to 700 metres (at out 2,200

feet), and then diminished according to the ordinary law. The barometric pressure was high, the air dry and calm. This phenomenon was confirmed by observations referred to by other members of the congress, and Père Dechevrens pointed out the necessity of taking the barometric pressure into account in comparing changes of temperature in the vertical. In China, at an observatory situated on a mountain in the midst of a vast plain, a rise of ten degrees of temperature is always observed for a fall of 20 millimetres in barometric pressure; and at Mount Washington, when the wind blows at the rate of 100 miles an hour, the variation of the temperature is thirty degrees for the same decrease of pressure.

—In the Teachers' School of Science of the Boston Society of Natural History, Dr. J. Walter Fewkes will give a series of ten lessons (Lowell free courses) during the winter of 1890-91, "On Common Marine Animals from Massachusetts Bay." The general scope of this course will embrace the ordinary marine animals of New England. It is intended to give special attention to the mode of life, differences in external forms, local distribution, habitats, methods and proper time to collect the eggs, young, and adults. The anatomy, embryology, and morphology of the species considered will be dealt with incidentally, wherever these branches of research can be used advantageously. The introductory lecture will give an outline of the course. The relative abundance of species and individuals, local causes which influence distribution, the rocky or sandy nature of the shores and their characteristic faunæ, and the influence of depth of water, tides, and temperature, will be considered. The relations and boundaries of the marine fauna of New England will be treated of under the following headings: comparison of the fauna of Massachusetts Bay with that of Narragansett Bay and the Bay of Fundy, and causes of the differences observed; pelagic animals; littoral and shallow-water genera; introduced and indigenous marine animals; marine animals which inhabit both brackish and fresh water. In the remaining lessons the principles discussed in the first lesson will be applied to the life histories of various characteristic species among the lower forms of marine animals. The course will be illustrated as far as possible. For further information address the secretary of the Boston Society of Natural History.

—Writing to *Nature* on the subject of sonorous sand, Mr. Henry C. Hyndman asks whether Professor H. C. Bolton is aware of an inland locality in South Africa, where, it is stated, the sands are sonorous. In a recent letter to the *Scotsman*, Mr. Hyndman mentioned that he had come across a paragraph in a work entitled "Twenty-five Years in an African Wagon," by Andrew A. Anderson, published in 1887, in which the author said, "Before leaving this part of the Griqualand West, I should like to describe that peculiar sand formation on the west side of the Langberg Mountain, which is in fact part of it. I heard from many of the Griquas and Potgielet living near it, that the lofty hills are constantly changing; that is, the sand-hills, 500 and 600 feet in height, in the course of a few years subside, and other sand-hills are formed where before it was level ground." And then in a footnote it is added, "I regret very much that the description of this sand formation has been left out, it being the only extraordinary geological formation known in Africa, and fully describes the musical sand."

—A means of easy intercommunication between writers, editors, and publishers has long been needed. To supply this need, the editor of *The Writer*, the Boston magazine for literary workers, has undertaken to compile a "Directory of American Writers, Editors, and Publishers," which will be published at the earliest possible day. No charge whatever will be made for the insertion of names and addresses in this directory, the usefulness of which, particularly to editors and publishers who wish to communicate with writers, will be evident at a glance. The desire of the editor is to make the directory as nearly complete as possible, but the army of minor writers is so great that it will be necessary to limit the number of addresses in some reasonable way. It has been thought best, therefore, to include in the first edition only the names of writers who have had a contribution printed in some one of the leading magazines or weekly periodicals during the last five years, or who have had a book published within the

last ten years. Writers who are included in either of these classes are requested to send at once to the editor of *The Writer*, P. O. Box 1905, Boston, Mass., the following items of information: (1) name of writer; (2) present residence; (3) permanent business address; (4) literary specialty; (5) titles of principal articles or books printed, and dates of publication. This information should be sent promptly, for the directory has been for some time in preparation, and its publication will not be long delayed. The editor of the directory will be obliged, if, in addition, writers will send on a separate sheet, not for publication in the directory, autobiographical particulars, including date of birth, place of birth, parents' names, date of marriage, name of husband or wife, successive places of residence, title and date of first work printed, list of later works, and other such matters as would be suitable for publication in a "Biographical Dictionary of American Authors," now in course of preparation. By the prompt co-operation of those who are interested in the matter, the early publication of the directory may be secured.

— Mr. John E. Nowers of Burton-on-Trent writes as follows on the tenacity of life in a cat, in *Hardwicke's Science Gossip* for October: "A very severe accident to a cat came under my notice about two years ago. The cat was in the habit of catching mice under a machine for lowering casks into a brewery cellar. One evening it was working, and the first hogshead of ale was rolled on and lowered. When it reached the bottom, the screams of an animal attracted the attention of the man. He looked, and found the cat was trapped between the edge of the cage and the floor. She was caught across the loins, and had to remain in that position until he called another man to help him up-end the hogshead. If he had rolled it off, it would have smashed the cat to atoms, as its weight was about six hundredweight. When the cat was released, she crawled away, and they could not find her again that night. Next morning she was found in the cellar alive, and brought up to me. I examined her, and could not find any bones broken, but she could hardly move. I decided not to kill her, but try and bring her round, so made a bed in a warm corner of the engine-room. She lay there for three or four days in a very weak and bad state. In about a week she had three dead kittens, and then began to recover rapidly. For a few weeks she could only limp a short distance from her bed. She is still alive, and no one would notice by her appearance that she had ever been so badly hurt. Since that time she has had about eight kittens. She is very quick in all her movements, and a very keen mouser. When I read the note on the same subject in *Science Gossip* for July, I thought the above might interest some of your readers."

—The monthly report of Arthur Winslow, State geologist of Missouri, shows that during the month of September detailed mapping has progressed uninterruptedly in the coal-fields in Randolph, Chariton, Howard, and Johnson Counties, and in the south-east in St. François and Iron Counties. About a hundred and fifty square miles have been covered. The examination of the clays and structural materials of Kansas City and of the tributary country was begun about the middle of the month, and work has been done in both Jackson and Henry Counties. There are in and about Kansas City some thirty-two works engaged in the manufacture of clay products, and from fifteen to twenty quarries. The country about this city, including Henry and other counties, has valuable deposits of clays and other structural materials which are supplied to Kansas City and other points: hence, from Kansas City as a centre, will properly be made an examination of a large portion of western central Missouri. In connection with this line of work, inspections have further been made of clay deposits and works in Callaway and Audrain Counties. The examination of the mineral waters of the State has been actively pushed in the field during the past month. About thirty localities have been visited, and some twenty samples for analysis have been collected from the following sixteen counties: Monroe, Audrain, Callaway, Boone, Howard, Randolph, Livingston, Worth, Gentry, Nodaway, Buchanan, Platte, Clinton, Clay, Adair, and Jackson. As this work progresses, the importance of the subject is constantly developing. A very large amount of capital has been invested in improvements at numerous

of these springs in the State, and many of them have a large patronage. There is evidence that the waters at many places are of decided therapeutic value, though a determination of their compositions is necessary to fully substantiate this. Paleontologic work has been in progress in Henry, St. Clair, Polk, and Greene Counties, and large additions have been made to the collections of the survey, besides what has been gathered for study through the co-operation of the United States Geological Survey. During the latter half of the month, work has been done in classifying, labeling, and arranging specimens for exhibition in the cabinet of the survey. Besides this systematic work, inspections for special purposes have been made in Camden, Laclede, St. Clair, Randolph, and Callaway Counties. The work in the coal-fields has already progressed far enough for it to be apparent that the coal-lands at present under development represent only a small portion of the whole, and that many farms and other lands contain beds which should prove valuable possessions to their owners. These lands offer a promising field for investment; and that this fact is appreciated by those who have knowledge of the ground, is evidenced by the extent to which such lands in some sections are passing into the control of investors and companies.

—The Manchester (England) Steam Users' Association has issued a report on a series of experiments made with a view of ascertaining the result of injecting feed-water into a boiler when the boiler is short of water, and the furnace is red-hot. It has for long been a common belief among engineers that many boiler explosions are due to this cause; and to the same cause have been attributed accidents to domestic circulating boilers which have been allowed to run dry, and have then had cold feed-water admitted. The correctness of this belief has, however, for some time been doubted, and the elaborate series of experiments recorded in this report go to prove that it is altogether erroneous. As described in the *Journal of the Society of Arts*, London, a Lancashire boiler 27 feet long was fitted up for the purpose of the experiments, so that the condition which it was desired to investigate could be reproduced, while observations could be taken of what was going on within the boiler. These experiments were by no means free from danger, and an observatory had to be constructed near the boiler. As a result, it was found that the sudden injection of the cold feed did not cause a rapid generation of steam, and a sudden violent pressure which the boiler in its weakened condition could not stand. In some cases, indeed, the pressure was slightly raised; but it always fell immediately afterwards, and in some cases the cold feed at once lowered the pressure. The writers of the report even think that it might be advantageous in cases where the water has been allowed to get very low, and the furnace-crowns to become heated, to turn on the feed, though they hesitate, in the present state of knowledge on the subject, to recommend such a proceeding.

—The London *Times* prints statistics, compiled by the Lyons syndicate of silk merchants, respecting the production of silk in the world last year. The figures are, of course, merely approximate, for the results of the harvest in the interior of China, Japan, India, Persia, and the Caucasus, cannot be absolutely estimated. If it were possible to get the exact figures of the production in these comparatively unknown regions, it is not an exaggeration to say that the general silk-production of the world would be found to be double what the figures show it to be now. The syndicate has no interest in securing definite information concerning these remote districts. It is sufficient for commercial purposes to obtain the returns of the European harvests, and those districts of the Far East which supply European and American manufacturers. The syndicate estimates the general production of silk in 1889 at 11,706,000 kilos. For the previous four years the figures were as follows: 1888, 11,548,000 kilos; 1887, 11,888,000 kilos; 1886, 10,554,000 kilos; and 1885, 9,002,000 kilos. The average of the four years 1885 to 1888 being 10,748,000 kilos, it will be seen that the production of 1889 considerably exceeds the average. This result has been obtained notwithstanding the deficiency in the European harvests, owing to the improvement in the Levant district, notably Syria, and especially in the larger Asiatic arrivals.